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the same species as the Greenland specimens called *Ophioglossum granulatum*. This is another illustration of the great caution necessary in using the determinations of impressions or casts as the basis of conclusions in reference to the history of a group.—J. M. C.

Classification of plants.—PROFESSOR BESSEY⁵³ has issued a second edition of his *Outlines of plant phyla*, the first having been noted in BOT. GAZ. 51:317. 1911, where it was stated that plants were grouped into 14 coordinate phyla, and their names were given. The present edition contains an interesting census, the enumeration of species, in terms of the four conventional groups, being as follows: thallophytes 79,450 (64,000 of which are fungi); bryophytes 16,000; pteridophytes 4524; spermatophytes 133,040 (only 540 of which are gymnosperms). The total is 233,614 species, distributed among 648 families.—J. M. C.

Vestigial axillary strands of Trichomanes.—It has been known for some time that vestigial axillary strands occur among the Hymenophyllaceae, in addition to the general occurrence of axillary branches. Miss CHAMBERS⁵⁴ has examined material of *Trichomanes javanicum* from the Fiji Islands and finds the axillary vestige ending in a conical mass of parenchyma, which suggests the last vestige of an axillary bud. The important fact is that comparable situations in *Helminthostachys* and the Botryopterideae suggest that Botryopterideae, Ophioglossaceae, and Hymenophyllaceae “are in one circle of affinity.”—J. M. C.

Discomycetes of Iowa.—SEEVER⁵⁵ has brought together in very attractive form the available information in reference to the discomycetous flora of Iowa. It is intended mainly as a guide to local students, and therefore is in manual form, with keys and full descriptions. There are presented 126 species and 56 genera. This average of approximately two species to a genus, 23 of the genera being represented by a single species and the largest one by only 11, indicates that the generic boundaries in the group are rather closely drawn about the species.—J. M. C.

Seeds of Bennettitales.—WIELAND⁵⁶ has sectioned an unusually well preserved specimen of *Cycadeoidea* obtained recently from the Black Hills region (near Hermosa), and makes it the occasion for bringing the seed

⁵³ BESSEY, CHARLES E., *Outlines of plant phyla*. 2d ed. pp. 20. Private publication. 1911.

⁵⁴ CHAMBERS, HELEN S., The vestigial axillary strands of *Trichomanes javanicum* Bl. Ann. Botany 25:1037-1043. figs. 4. 1911.

⁵⁵ SEEVER, FRED J., Iowa Discomycetes. Bull. Lab. Hist. Univ. Iowa 62:41-131. pls. 16. 1911.

⁵⁶ WIELAND, G. R., A study of some American fossil cycads. V. Further notes on seed structures. Amer. Jour. Sci. IV. 32:133-155. figs. 9. 1911.

structures of the group into one general survey, and especially the layers of the testa. He reiterates the belief that in the structures referred to *Cycadeoidea* most resembles *Lagenostoma*, and of course it is to be included, on account of its generally ancient features, in the general category of seeds of paleozoic type.—J. M. C.

Flora of Kansas.—Mr. and Mrs. SMYTH have begun the publication of a catalogue of the flora of Kansas,⁵⁷ the first part issued containing the mosses and ferns. The large groups are described both taxonomically and morphologically, and the families, genera, and species listed, the habitats and stations also being indicated. The classification is unconventional. It is interesting to note that the display of these groups in Kansas, on the basis of the number of species, is as follows: liverworts 25, mosses 107, pteridophytes 33.—J. M. C.

Mitosis in cereals.—NAKAO⁵⁸ presents the results of his study of mitosis in the pollen mother cells of four cereals: *Triticum vulgare*, *Hordeum distichon*, *Secale cereale*, and the hybrid between *T. vulgare* and *S. cereale*. The number of chromosomes is 8 in wheat and rye, and 7 in barley. The appearance of abnormal features in the development of the pollen mother cell was a common tendency, as well as a tendency to degenerate at various stages.—S. YAMANOUCHI.

Calcareous and siliceous vegetation.—BOUGET⁵⁹ concludes from a study of calcareous and siliceous floras in the Pyrenees that the plants of calcareous soil are more responsive to seasonal differences than are those of siliceous soil. Calcareous soils also are richer in species than are siliceous soils, and they show at a given altitude a greater mixture of plants whose chief distributional areas are higher and lower.—H. C. COWLES.

⁵⁷ SMYTH, BERNARD B., and LUMINA C. RIDDLE, Catalogue of the flora of Kansas. Part I. Mosses and ferns. Trans. Kan. Acad. Sci. 23:273-295. 1911. Also issued with index and separate pagination.

⁵⁸ NAKAO, M., Cytological studies on the nuclear division of the pollen mother cells of some cereals and their hybrids. Jour. Coll. Agric. Sapporo (Japan) 4:173-190. pls. 10-13. 1911.

⁵⁹ BOUGET, J., Note sur la végétation de la bande septentrionale des terrains secondaires dans les Pyrénées. Rev. Gén. Bot. 22:213-221. 1910.